



ITCS 209 Object Oriented Programming	Name:	Lab	Challenge Bonus	
	ID:			
	Section:			

Lab11: Map, File I/O, and Exception – Cash Registration

In this lab, you are implementing a simple cash registration program by applying the following concepts in OOP: Map (HashMap), File Input/Output, and Exception.

Your task is to complete the **CashRegister** class. For all sub-tasks, you can see `// TODO` comment in the `CashRegister.java` file.

1) To construct `CashRegister`, you have to read in a set of acceptable coin descriptions from a file. Add all acceptable coin names and values into `coinType Map`. The input file has the format

```
coinName1 coinValue1  
coinName2 coinValue2  
coinName3 coinValue3
```

If the file is not properly formatted (for example, `coinValue` comes first, and follow by `coinName`), you will throw a **NumberFormatException** exception with message "Incorrect coin format".

2) Implement getter method for `getPurchase()` and `getPayment()`

3) Implement `getCoinTypeList()` return string of all acceptable coins for this cash registration. Example string can be found in the comment. The format is not strict, as long as you can get all coins' names and values

4) Implement `recordPurchase(double amount)` to add up the current purchase with a new purchase record

5) Implement `recordPayment(int coinCount, String coinName)` to add up the current payment with a new payment. For each record, you will have to multiple the number of coins with the coin's value. This method will throw **IllegalArgumentException** exception with a message "This cash registration doesn't accept this coin: <coinName>"

6) The `getReceipt()` method is already provided. You just need to change the sale person's name to be your firstname and lastname.

7) Implement `printReceipt(String outputFile)` to write a receipt into an output file. Hint: you can use `getReceipt()` method to get the content of the receipt.

(See Expected Output in the Next Page)

Expected output after run **App.java**

```
Testcase 1: Easy case
Cash register only accept these types of coin:
nickel    0.05
dime      0.10
penny     0.01
quarter   0.25
dollar    1.00

-----
Sale person: <YOUR NAME>
Purchase Amount:    5.99
Payment Amount:     2.5
NOTE: Insufficient payment, please insert more coins.

Sale person: <YOUR NAME>
Purchase Amount:    9.99
Payment Amount:    11.0
Change Amount:     1.01

Testcase 2: Invalid coins description
Cannot create cash registration: Incorrect coin format
Please try a new input file. Bye!
Null expected!

Testcase 3: Invalid coins payment
Cash register only accept these types of coin:
nickel    0.05
dime      0.10
penny     0.01
quarter   0.25
dollar    1.00

-----
This cash registration doesn't accept this coin: ten-baht
Sale person: <YOUR NAME>
Purchase Amount:    19.99
Payment Amount:     0.0
NOTE: Insufficient payment, please insert more coins.
```

Challenge Bonus (Optional):

Create a superclass "RegisterMachine" and make CashRegister class extends RegisterMachine class. In addition, create another type of register with appropriate methods. Demonstrate how to use this new register in your main program.